AMENDMENTS TO THE CLAIMS

Please amend claims 9 and 17 as indicated:

Claims

1. (original) A liquid core waveguide device for fluorescence spectroscopy, comprising

a) a flexible tube for defining a liquid core and being transmissive to light in a relatively short excitation wavelength range, the flexible tube having at least one outlet end,

b) a light coupling device connected to the outlet end of the flexible tube through which emitted light in a relatively longer wavelength range can pass, and

c) a first light source configured to direct light in the relatively short excitation wavelength range through the walls and into the liquid core of the flexible tube to excite molecular material in the core.

2. (original) The liquid core wave guide of claim 1, wherein the flexible tube is configured into a coil and wherein at least a portion of the first excitation light source is arranged in the coil.

3. (original) The liquid core wave guide of claim 2, wherein the first light source is capable of generating ultraviolet light of a wavelength suitable to cause fluorescence of a material in the liquid core.

4. (original) The liquid core waveguide of claim 2, further comprising a support tube, the flexible tube being wrapped in windings about the outer surface of the support tube to form a tight coil about the support tube, wherein the light source is disposed at least partially within the support tube, and wherein the support tube is configured of material which is transmissive of light in the relatively shorter excitation wavelength range.

5. (original) The liquid core waveguide of claim 4, including a filter device configured to selectively control the wavelength range of the relatively shorter wavelength excitation light which is transmitted into the flexible tube.

6. (original) The liquid core waveguide of claim 5, wherein the filter is disposed between the first light source and the flexible tube, and the filter includes a plurality of narrow band filters which enable selective control of the wavelength range of light within the excitation range which is transmitted from the light source to the flexible tube.

7. (original) The liquid core waveguide of claim 5, wherein the filter is disposed between the first light source and the flexible tube, and the filter is moveable relative to the support tube.

8. (original) The liquid core waveguide of claim 4, wherein the first light source comprises a light emitter disposed outside of the support tube and disposed to direct light in the excitation range into the support tube, and further wherein a reflector is provided within the support tube for redirecting light from the emitter toward the flexible tube.

9. (currently amended) The liquid core waveguide of claim 1,

wherein both ends of the flexible tube are provided with light coupling devices, each configured to enable light emissions to pass there through,

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wherein the flexible tube is configured to direct a portion of the light emissions toward each light coupling device, and

wherein a light splitter is provided in communication with each light coupling device, the light splitter ~~light coupler~~ being configured to couple the light emissions from the ~~respective~~ light coupling devices on both ends of the tube and to direct the coupled light emissions to a spectrophotometric device for analyzing such light emissions.

10. (original) The liquid core waveguide of claim 1, wherein each light coupling device has a graded index (GRIN) lens for providing a predetermined profile to the light passing therethrough.

11. (original) The liquid core waveguide of claim 10, wherein the flexible tube has a core with a substantially constant cross section circular inner diameter, the GRIN lens at each light coupling device having a cylindrical profile with a circular cross sectional diameter which is greater than the circular cross sectional diameter of the flexible tube, and wherein the GRIN lens at each light coupling device is substantially coaxial with its respective light coupling device, whereby a substantial portion of the light emissions passing through the light coupling device is captured by the GRIN lens associated with the light coupling device and directed to the light coupler.

12. (original) The liquid core waveguide of claim 1, wherein both ends of the flexible tube are provided with a light coupling device through which emitted light in a relatively longer wavelength range can pass, the waveguide further comprising a second light source capable of generating broadband electromagnetic radiation, the second light source being optically

connected to the light coupling device on the end of the flexible tube opposite the outlet end whereby light from the second light source can be directed into the core of the flexible tube and attenuated light produced in the core can be directed through the outlet end of the flexible tube for analysis.

13. (original) The liquid core wave guide of claim 12, wherein the flexible tube is configured into a coil and wherein at least a portion of the first excitation light source is arranged in the coil.

14. (original) The liquid core wave guide of claim 13, wherein the first light source is capable of generating ultraviolet light of a wavelength suitable to cause fluorescence of a material in the liquid core.

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15. (original) The liquid core waveguide of claim 14, further comprising a support tube, the flexible tube being wrapped in windings about the outer surface of the support tube to form a tight coil about the support tube, wherein the light source is disposed at least partially within the support tube, and wherein the support tube is configured of material which is transmissive of light in the relatively shorter excitation wavelength range.

16. (original): The liquid core waveguide of claim 12, wherein the first and second light sources can be individually activated whereby the waveguide can be used for fluorescence spectroscopy by activating the first light source and deactivating the second light source and, in addition, be used for absorbance spectroscopy by activating the second light source and deactivating the first light source.

17 (currently amended) A liquid core waveguide system comprising a flexible tube and a coupling device providing a liquid and a light coupling for at least one end of said flexible tube, said flexible tube (i) having a substantially circular cross section and a substantially constant diameter, and (ii) having an index of refraction less than the index of refraction of a liquid which is disposed in the flexible tube, the coupling device comprising a housing and a graded index (GRIN) lens to substantially focus light transmitted to a ~~between~~ ~~said~~ light conduit spaced from ~~and the end of~~ the flexible tube.

18. (original) The liquid core waveguide of claim 17, wherein the flexible tube is configured into a coil, and wherein the GRIN lens and the end of the flexible tube are held in substantially fixed, coaxial relation to each other within the coupling device.

19. (original) The liquid core waveguide of claim 18, wherein a portion of the flexible tube is disposed within the coupling device and further wherein the GRIN lens has a substantially cylindrical configuration and a cross-sectional area which is larger than the cross-sectional area of the portion of the flexible tube disposed within the coupling device, whereby the GRIN lens is oriented to capture substantially all of the light passing through the coupling device.

20. (original) The liquid core waveguide of claim 19, wherein the coupling device defines a fluid port, a light port and a tube connector formed therein,

the fluid port configured for attachment to a fluid conduit, the light port being configured for connection to a light conduit, and the tube connector being configured for connection to an end of the flexible tube, and

wherein the light port includes the graded index (GRIN) lens.

21. (original) The liquid core waveguide of claim 20, wherein a light connector is disposed in the light port and a tube connector is disposed in the tube connector port of the coupling device, a light conduit comprising one or more light fibers being disposed within the light connector and the portion of the flexible tube being disposed within the tube connector, the light and tube connectors being configured to hold the light conduit and tube in relatively fixed position with the coupling device, and the GRIN lens being disposed within a supporting sheath located in a passageway disposed in the coupling device and located between the light and tube connectors, the fluid port being disposed to communicate liquid between the light port and the tube connector port at a location disposed between the GRIN lens and the tube connector port.